



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,227	03/10/2004	William D. Woodward JR.	A-7784	2972
5642	7590	10/10/2007	EXAMINER	
SCIENTIFIC-ATLANTA, INC.			KAO, WEI PO ERIC	
INTELLECTUAL PROPERTY DEPARTMENT			ART UNIT	PAPER NUMBER
5030 SUGARLOAF PARKWAY			2616	
LAWRENCEVILLE, GA 30044				
NOTIFICATION DATE		DELIVERY MODE		
10/10/2007		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

[PTOmail@sciatl.com](mailto:PTOmail@sciatl.com)

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/797,227	WOODWARD ET AL.	
	Examiner Wei-po Kao	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 10 March 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-26 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-26 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 10 March 2004 is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
     Paper No(s)/Mail Date \_\_\_\_\_.  
 4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date \_\_\_\_\_.  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claims 6, 7, 8, 11 and 12 are objected to under 37 CFR 1.75 because of the following informalities:

The claimed term, “the second clock,” of claim 6 line 2 seems to refer to the second local clock of claim 1. It is suggested to change to “the second local clock.”

The claimed terms, “the timestamp” and “the packet” of claim 7 lines 2, 4 and 5 seem to refer to the timestamps of the selected packets and each selected packet respectively. It is suggested to change to “the timestamps” and “the each selected packet” respectively.

The claimed terms, “the timestamp” and “the time” of claim 8 lines 2 and 3 seem to refer to the timestamps of the selected packets and a new time respectively. It is suggested to change to “the timestamps” and “the new time” respectively.

The claimed term, “... in the first of the second ...” of claim 11 line 6 should be change to “... in the first or the second ...”

The claimed term, “the selected packet” of claim 12 line 3 seems to refer to each selected packet. It is suggested to change to “the each selected packet.”

The claimed term, “... in the first of the second ...” of claim 12 line 12 should be change to “... in the first or the second ...”

Appropriate correction is required.

***Claim Rejection - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-9 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For Claim 1, the claimed term, "the buffer" of line 11 has no antecedent basis.

For Claim 9, the claimed term, "the buffer" of line 2 has no antecedent basis.

Art Unit: 2616

For Claim 12, the claimed term, "the local clock" of line 6 is unclear. It is suggested to explicitly point out which local clock the term is referring to.

Claims 2-8 are rejected as being dependent on the rejected claim 1.

***Claim Rejection - 35 USC § 103***

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

Art Unit: 2616

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 6, 7, 8, 9, 13, 14, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead et al, U.S. Patent No 5640388 in view of Johansen, U.S. Patent No 6631144.

Regarding Claim 1, Woodhead et al teach that a **method of substantially removing jitter from a stream of packets transmitted from a transmission site to a reception site** (see Abstract), **the method comprising the steps of: buffering packets of the stream of packets in a memory at an intermediate site interposing the transmission site and the reception site, wherein selected packets of the stream of packets include timestamps having time values for an external clock** (see Column 6 Line 49-67 i.e. the timestamp values are the time values according

Art Unit: 2616

to the clock of the transmission site, thus an external clock); **locking a first local clock with the time values of the timestamps included in the selected packets to the external clock** (see Column 7 Line 49-51); **and extracting packets from the memory at a nominal rate controlled by a local clock** (see Column 7 Line 26-36 i.e. the local clock is used to control and maintain the buffer outputting rate). However, Woodhead et al do not teach that **the method wherein includes a second local clock, which is locked with the time values of the timestamps of the selected packets extracted from the buffer based on the first local clock.**

Johansen from the same field of endeavor teaches that **the method wherein includes a second local clock, which is locked with the time values of the timestamps of the selected packets extracted from the buffer based on the first local clock** (see Abstract, Column 6 Line 66-67, Column Line 1-19 i.e. the clock of the second PLL is locked to the output, which is the reproduction of the timing information fed to the first PLL, of the first PLL; a PLL is commonly used to reproduce the clock signal in phase to the reference clock signal fed to it). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate Johansen's multi-rate transponder system, which in particular connects two PLL in series at the transmission part, to the jitter removal apparatus. The motivation would have been that by connection two PLLs, which have different loop bandwidth, in series helps suppress the jitter transfer from the incoming data stream and further minimize the jitter generation when transmitting the data streams (see Column 7 Line 10-19).

Regarding Claim 6, Woodhead et al further teach that **the method, further including the step of: recording a time measured relative to the second clock, wherein the recorded time is**

Art Unit: 2616

**associated with when one of the selected packets is extracted from the memory (see Column 7 Line 7-8).**

Regarding Claim 7, Woodhead et al further teach that **the method, further including the step of: stamping a new time in the timestamp of the selected packets, wherein for each selected packet the new time compensates for variable delay between when the packet is transmitted from the intermediate site and when the packet was extracted from the memory; and transmitting from the intermediate site packets extracted from the memory, wherein the time values of the timestamps in the selected packets are transmitted substantially jitter free (see Abstract, Column 7 Line 56-65).**

Regarding Claim 8, Woodhead et al further teach that **the method, further including the step of: stamping a new time in the timestamp of the selected packets extracted from the memory using the second local clock to set the time (see Abstract, Column 56-65).**

Regarding Claim 9, Woodhead et al further teach that **the method, further including the steps of: recording an extraction time for each selected packet extracted from the buffer, wherein the extraction time for each selected packet corresponds to the time of the second local clock when the selected packet was extracted from the memory; associating each extracted selected packet with its extraction time; determining a variable delay time for each extracted selected packet using the extraction time for the extracted selected packet, wherein the variable delay time corresponds to the delay between extraction from the**

Art Unit: 2616

**memory and transmission from the intermediate site of the packet; determining a new time value for the timestamp of each selected packet using the variable delay time and the second local clock (see Column 7 Line 7-8, 56-67).**

The apparatus claims 13, 14, 15 and 16 correspond to the method claims 1, 6, 7, 8 and 9 and are therefore rejected under the same reasons set forth in the discussions of the claims 1, 6, 7, 8 and 9.

9. Claims 2 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead et al, U.S. Patent No 5640388 in view of Johansen, U.S. Patent No 6631144.

Regarding Claim 2, Woodhead et al and Johansen teach that **the method further including the steps of: receiving from the transmission site at the intermediate site the stream of frames, wherein each frame encapsulates at least one packet therein** (see Woodhead et al Figure 1, Column 2 Line 24-28). However, Woodhead et al and Johansen do not teach that **de-encapsulating the at least one packet from each frame of the stream of frames and providing the packets to the memory**. Examiner takes the official notice that it is common practice in the art to de-encapsulate frames or packets to extract the frames or packets encapsulated inside a frame or packet; encapsulating packets is a common way to transport data packets in a packet network especially when the underlying protocol is different from the data being transported. At the time of the invention, it would have been obvious to a person ordinary skill in the art to de-encapsulate the packets from the PES if it is received. The rationale would

Art Unit: 2616

have been that without reinventing or implementing addition functionality to the system, multiple data packets can be received and processed.

The apparatus claim 17 corresponds to the method claim 2 and is therefore rejected under the same reason set forth in this paragraph.

10. Claims 3, 4, 5, 18, 19, 20, 21, 22, 23, 24, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead et al, U.S. Patent No 5640388 and Johansen, U.S. Patent No 6631144 as applied to claim 1 above, and further in view of Slattery et al, U.S. Patent No 6111896.

Regarding Claim 3, Woodhead et al and Johansen teach that **the method including the step of: calculating an average bit rate for the received stream of frames between a first timestamp and a second timestamp** (see Woodhead et al, Column 17 Line 35-45); **subtracting the offset from the time value of the second timestamp** (see Woodhead et al, Column 17 Line 51-67 25-34, Column 18 Line 1-20). However, Woodhead et al and Johansen do not teach that **the method further including the step of: calculating an offset for the second timestamp using the average bit rate**. Slattery et al from the same field of endeavor teaches that **the method further including the step of: calculating an offset for the second timestamp using the average bit rate** (see Abstract, Column 45 Line 13-39). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the method of remultiplexing data stream to remove associated jitters from Slattery to Woodhead's invention.

Art Unit: 2616

The rationale would have been that by timing each transport packet other than the ones bearing timestamps, the method of removing jitters and maintaining constant transit time or transmission rate can further be improved and be more robust.

Regarding Claim 4, Woodhead et al further teach that **the method, wherein the step of calculating the average bit rate further includes the steps of:** receiving a first particular frame of the stream of frames, the first particular frame having a first particular selected packet having the first timestamp therein; receiving a second particular frame of the stream of frames, the second particular frame having a second particular selected packet having the second timestamp therein; determining the number of bits of packets between the first timestamp and the second timestamp inclusive of either the first timestamp or the second timestamp; and dividing the number of bits by the time difference between the first timestamp and the second timestamp (see Column 17 Line 35-45).

Regarding Claim 5, Woodhead et al, Johansen and Slattery et al teach all the limitations in claim 3 as disclosed in this paragraph. However, for claim 5, Woodhead et al and Johansen do not teach that **the method, wherein the step of calculating the offset further includes the steps of:** receiving a particular frame of the stream of frames having multiple sequential packets including a particular selected packet having the second timestamp therein; determining the number of bits of packets between the particular packet and the start of the sequence of the multiple packets; and dividing the number of bits by the average bit rate. Slattery et al from the same field of endeavor teach that **the method, wherein the step of calculating the**

Art Unit: 2616

**offset further includes the steps of: receiving a particular frame of the stream of frames having multiple sequential packets including a particular selected packet having the second timestamp therein; determining the number of bits of packets between the particular packet and the start of the sequence of the multiple packets; and dividing the number of bits by the average bit rate** (see Column 45 Line 13-39). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the method of remultiplexing data stream to remove associated jitters from Slattery to Woodhead's invention. The rationale would have been that by timing each transport packet other than the ones bearing timestamps, the method of removing jitters and maintaining constant transit time or transmission rate can further be improved and be more robust.

The apparatus claims 18, 19, 20, 21, 22, 23, 24, 25 and 26 correspond to the method claims 3, 4 and 5 and are therefore rejected under the same reasons set forth in the discussions of the claims 3, 4 and 5.

11. Claims 10, 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woodhead et al, U.S. Patent No 5640388 view of Slattery et al, U.S. Patent No 6111896.

Regarding Claim 10, Woodhead et al teach that **a method of substantially removing jitter from a stream of packets transmitted from a transmission site to a reception site, the method comprising the steps of: receiving at an intermediate site a stream of frames, each frame encapsulating a set of packets, wherein selected packets include a timestamp**

**defining a time value for a clock external to the intermediate site; determining whether the set of packets from each frame includes a given selected packet having a timestamp therein (see Abstract, Column 6 Line 49-51); responsive to the set of packets including the given selected packet, determining a time offset for the given selected packet, wherein the time offset is based upon the position of the given selected packet within the frame in which the given selected packet was received (see Column 17 Line 25-34); transmitting the packets from the intermediate site at a predetermined rate (see Column 17 Line 35-45).** However, Woodhead et al do not teach that **the method comprising the step of stamping a new time value in the timestamp of the given selected packet, wherein the new time value is defined by subtracting the time offset from the time value for the external clock.** Slattery et al from the same field of endeavor teach that **the method comprising the step of stamping a new time value in the timestamp of the given selected packet, wherein the new time value is defined by subtracting the time offset from the time value for the external clock** (see Column 45 Line 56-67, Column 46 Line 1-26). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the method of remultiplexing data stream to remove associated jitters from Slattery to Woodhead's invention. The rationale would have been that by further removing the drift from each transport packet bearing timestamps, the method of removing jitters and maintaining constant transit time or transmission rate can further be improved and be more robust.

Regarding Claim 10, Woodhead et al and Slattery et al teach all the limitations as disclosed in this paragraph except that **de-encapsulating the set of packets from each frame.** Examiner

takes the official notice that it is common practice in the art to de-encapsulate frames or packets to extract the frames or packets encapsulated inside a frame or packet; encapsulating packets is a common way to transport data packets in a packet network especially when the underlying protocol is different from the data being transported. At the time of the invention, it would have been obvious to a person ordinary skill in the art to de-encapsulate the packets from the PES if it is received. The rationale would have been that without reinventing or implementing addition functionality to the system, multiple data packets can be received and processed.

Regarding Claim 11, Woodhead et al teach that **the method, wherein the step of determining a time offset further includes the steps of: calculating for the stream of frames an average bit rate, wherein the average bit rate is defined as the number of bits of packets between a first timestamp included in a first selected packet and a second timestamp included in a second selected packet inclusive of either the number of bits in the first or the second timestamp divided by the change in time between the time values of the first and second timestamps** (see Column 17 Line 35-45). However, Woodhead et al do not teach that **the method further includes the steps of: determining for the set of packets that includes the given selected packet the number of packet bits between the start of the set of packets and the first bit in the given selected packet; and dividing the number of packet bits by the average bit rate to generate the time offset.** Slattery et al from the same field of endeavor teach that **the method further includes the steps of: determining for the set of packets that includes the given selected packet the number of packet bits between the start of the set of packets and the first bit in the given selected packet; and dividing the number of packet bits by the average**

Art Unit: 2616

**bit rate to generate the time offset** (see Column 45 Line 13-39). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the method of remultiplexing data stream to remove associated jitters from Slattery to Woodhead's invention. The rationale would have been that by timing each transport packet other than the ones bearing timestamps, the method of removing jitters and maintaining constant transit time or transmission rate can further be improved and be more robust.

Regarding Claim 12, Woodhead et al teach that **the method, further including the steps of: recording a first local clock time for each selected packet, the first local clock time corresponding to when the frame carrying the selected packet arrived at the intermediate site; buffering in a memory the packets carried by the stream of frames; extracting packets from the memory at a rate clocked by the local clock** (see Column 16 Line 60-67, Column 17 Line 1-17). However, Woodhead et al do not teach that **the method further includes the steps of: prior to transmitting each selected packet, recording a second local clock time and generating calculating for the stream of frames an average bit rate, wherein the average bit rate is defined as the number of bits of packets between a first timestamp included in a first selected packet and a second timestamp included in a second selected packet inclusive of either the number of bits in the first of the second timestamp divided by the change in time between the time values of the first and second timestamps; determining for the set of packets that includes the given selected packet the number of packet bits between the start of the set of packets and the first bit in the given selected packet; and dividing the number of packets bits by the average bit rate to generate a transmission time.** Slattery et al from

the same field of endeavor teach that the method further includes the steps of: prior to transmitting each selected packet, recording a second local clock time and generating calculating for the stream of frames an average bit rate, wherein the average bit rate is defined as the number of bits of packets between a first timestamp included in a first selected packet and a second timestamp included in a second selected packet inclusive of either the number of bits in the first or the second timestamp divided by the change in time between the time values of the first and second timestamps; determining for the set of packets that includes the given selected packet the number of packet bits between the start of the set of packets and the first bit in the given selected packet; and dividing the number of packets bits by the average bit rate to generate a transmission time (see Column 45 Line 13-39). At the time of the invention, it would have been obvious to a person ordinary skill in the art to incorporate the method of remultiplexing data stream to remove associated jitters from Slattery to Woodhead's invention. The rationale would have been that by timing each transport packet other than the ones bearing timestamps, the method of removing jitters and maintaining constant transit time or transmission rate can further be improved and be more robust.

### *Conclusion*

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Referring to the PTO Form 892, references are cited to show similar method and system of removing jitters from transport data streams with timing information.

Art Unit: 2616

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wei-po Kao whose telephone number is (571)270-3128. The examiner can normally be reached on Monday through Friday, 8:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W.K.



RICKY Q. NGO  
SUPERVISORY PATENT EXAMINER